CLAIMS

1. A method for identifying antibacterial agents comprising: depleting bacteria of a strain comprising a luxAB construct of Ca^{2+}, incubating the Ca^{2+} depleted bacteria with an agent the antibacterial effect of which shall be determined, recording the light emitted by the bacteria upon addition of an aldehyde, the incubation being carried out at a temperature which is at least 10° C higher than the temperature at which the light is emitted by the bacteria, preferably at least 15° C higher.

2. The method of claim 1, wherein said strain is a natural or mutant *Yersinia* sp. strain.

3. The method of claim 2, wherein the strain is a *Yersinia pseudotuberculosis* strain.

4. The method of claim 1, wherein the incubation temperature is about 21° C and the emission temperature is about 37° C, respectively.

5. A method for identifying antibacterial agents comprising:

- providing a *Yersinia* sp. bacterial strain comprising a luxAB construct;
- propagating the strain at room temperature in a Ca^{2+} depleting medium to obtain a suspension of Ca^{2+} depleted bacteria containing the luxAB construct;
- dissolving a measured amount of a sample of an antibacterial agent candidate in water, a mixture of water and of an organic solvent or an organic solvent;
organic solvent to prepare a solution of the agent;
- combining the solution of the agent with an aliquot of the bacterial suspension to obtain a test suspension;
- incubating the test suspension at a first temperature for a selected
period of time;
- raising the temperature of the test suspension to a second temperature;
- continuing incubation at the second temperature for a selected period of time;
- lowering the temperature of the test suspension to a third temperature;
- continuing the incubation at the third temperature for a selected period of time;
- adding n-decanal or a functionally equivalent aldehyde to the test suspension;
- measuring light emitted from the test suspension over a period of time at the third

temperature;

- quantifying the light emitted;

- calculating an antibacterial activity based on the quantity of emitted light.

6. The method of claim 5, wherein said first and third temperature is from 20° C to 26° C and the second temperature is about 37° C.

7. The method of claim 5, wherein the aldehyde is decanal or a functionally equivalent aldehyde.

8. The method of claim 5, wherein the aldehyde is added to the test suspension in form of an aqueous emulsion.

9. The method of claim 5, where in the measured amount of sample is selected to provide a concentration of the agent in the test suspension from 10 □g per mL to 100 □g per mL.

10. The method of claim 5, wherein the light emitted is less than 20 % of that emitted in an experiment in which no anti-bacterial agent had been added.

11. The method of claim 5, wherein the light emitted is less than 40 % of that emitted in an experiment in which no anti-bacterial agent had been added.

12. The method of claim 5, wherein the light emitted is less than 60 % of that emitted in an experiment in which no anti-bacterial agent had been added.

13. A probe for identifying antibacterial agents comprising the *Yersinia pseudotuberculosis* strain pIB29EL.

14. A probe for identifying antibacterial agents comprising a *Yersinia pseudotuberculosis* strain selected from pIB29AL, pIB102AL, optionally also from pIB102EL.

15. A probe for identifying antibacterial agents comprising a *Yersinia pseudotuberculosis* strain selected from pIB102FL and pIB102FΔhlhL.

16. An agent capable of decreasing bacterial virulence comprising the structural element X–CO-NH-Y-Z, wherein X is aromatic or heteroaromatic carbon, Y is zero or -N=CH, and Z is unsubstituted or substituted aryl including heteroaryl.

17. An agent capable of decreasing bacterial virulence of the general formula I

A- CO-NH-B (I)

wherein

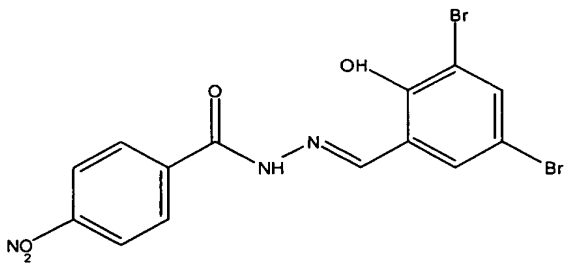
A is substituted or unsubstituted aryl or heteroaryl;

B is -X-Y, wherein X is zero or -N=CH- and Y is selected from unsubstituted aryl, unsubstituted heteroaryl, mono-, di- and tri-substituted aryl, mono-, di- and tri-substituted heteroaryl, with the proviso that, if X is -N=C-H-, Y is 2-hydroxyaryl.

18. The agent of claim 17, wherein, if A is substituted aryl or heteroaryl, it is preferred to be mono- or disubstituted by one or more of halogen, nitro, hydroxy, alkoxy, C_1-C_6 alkyl, C_1-C_6 alkenyl.

19. The agent of claim 17, wherein Y is selected from aryl and heteroaryl substituted with one or several of halogen, C_1-C_6 alkyl, C_1-C_6 alkenyl.

20. An antibacterial compound selected from:



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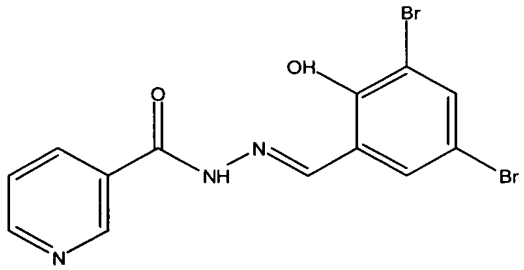

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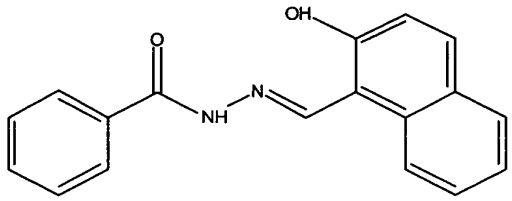

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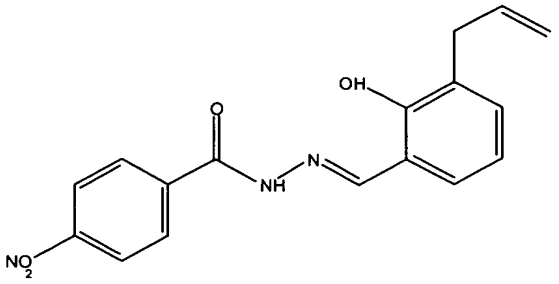

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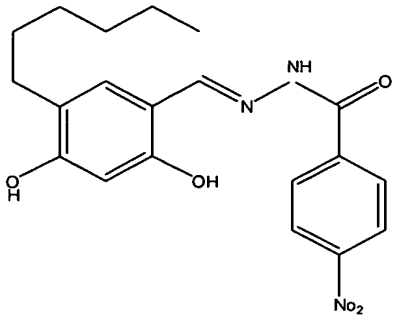

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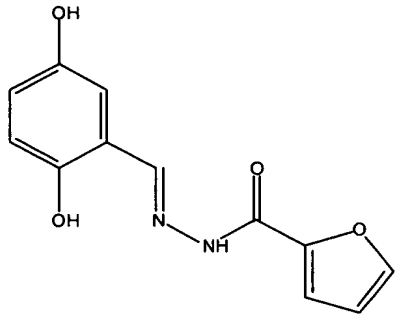

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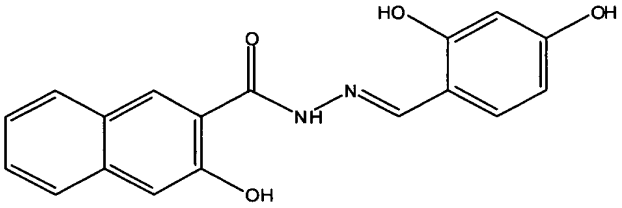

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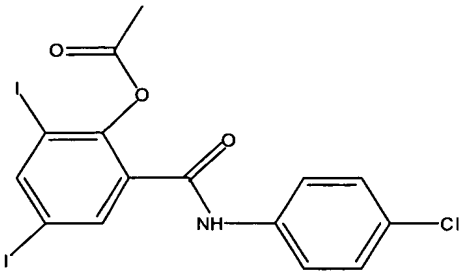

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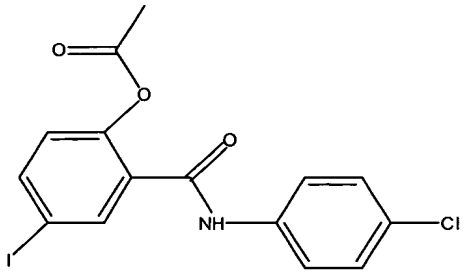

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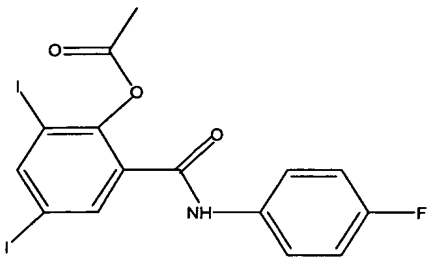

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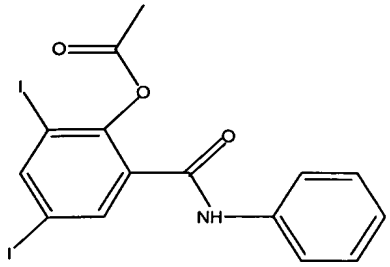

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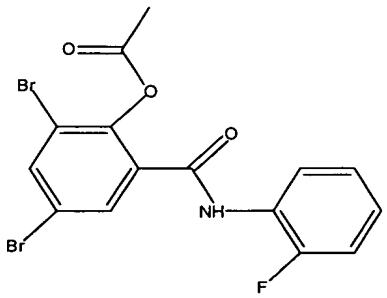

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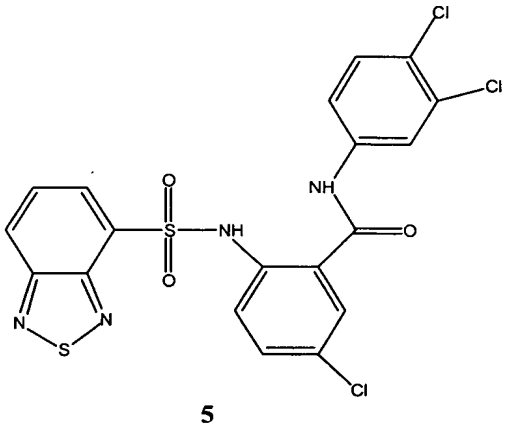

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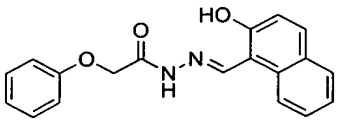
22. A method of screening for agents inhibiting virulence, the method being carried out in absence of eukaryotic cells, comprising contacting a gram-negative bacterium culture depleted in Ca^{2+}, in particular a *Yersinia* species, comprising a luxAB reporter gene construct, with a potentially bacterial virulence inhibiting agent, thereby forming a test suspension, manipulating the temperature of the test suspension and adding an aliphatic aldehyde to make the bacterium emit light, measuring the emitted light, comparing the amount of emitted light with the light emitted in absence of the bacterial virulence inhibiting or activating agent.

23. A method of screening for agents activating bacterial virulence, the method being carried out in absence of eukaryotic cells, comprising contacting a gram-negative bacterium culture enriched in Ca^{2+}, in particular a *Yersinia* species, comprising a luxAB reporter gene construct, with a potentially bacterial virulence activating agent, thereby forming a test suspension, manipulating the temperature of the test suspension and adding an aliphatic aldehyde to make the bacterium emit light, measuring the emitted light, comparing the amount of emitted light with the light emitted in absence of the bacterial virulence inhibiting or activating agent.

24. An antibacterial compound selected from:



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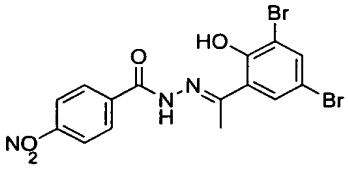

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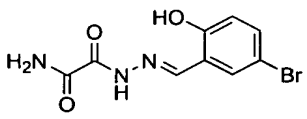

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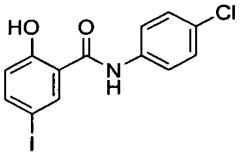

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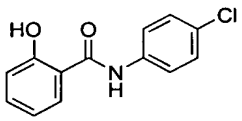

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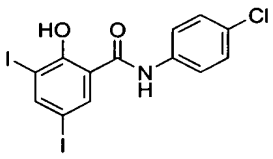

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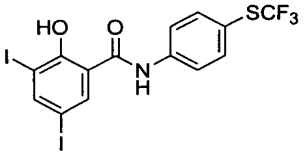

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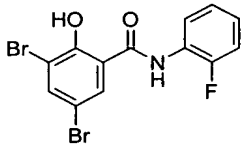

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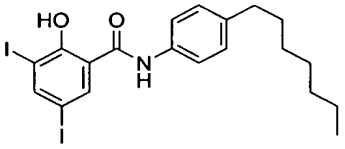

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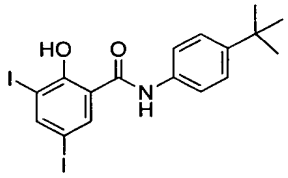

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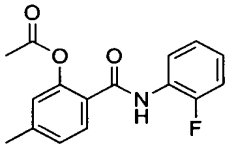

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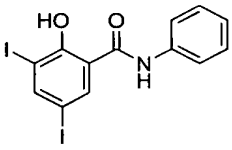

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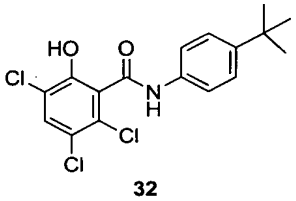

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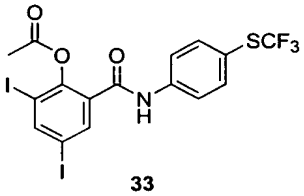

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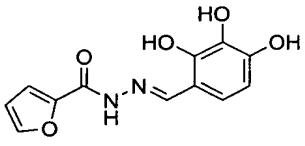

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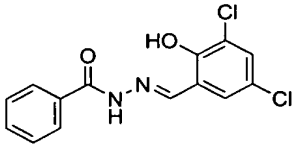

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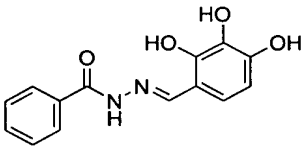

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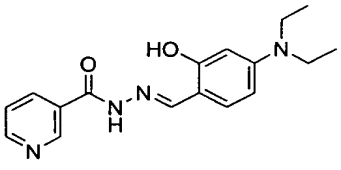

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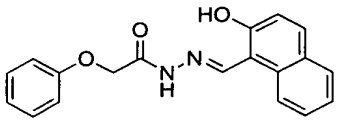

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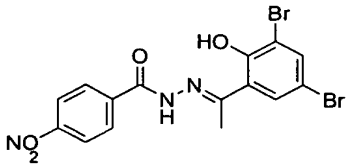

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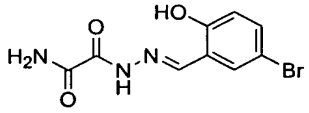

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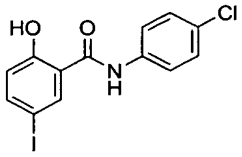

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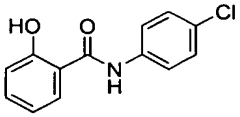

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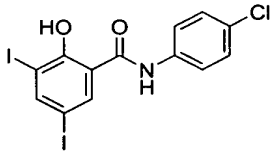

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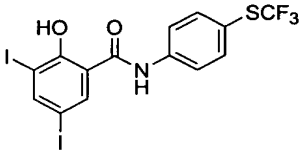

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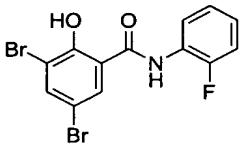

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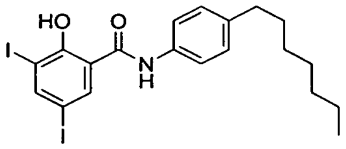

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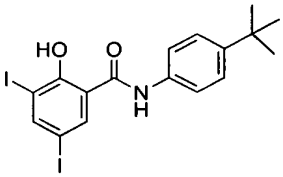

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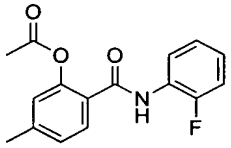

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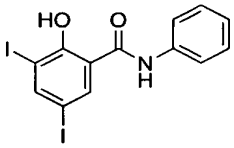

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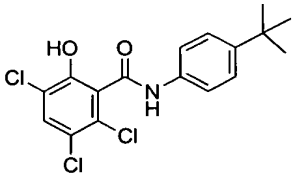

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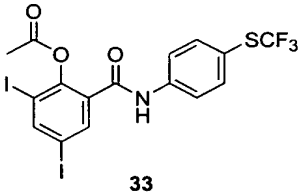

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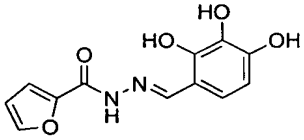

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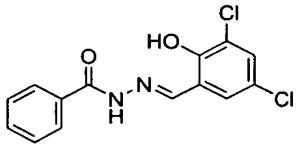

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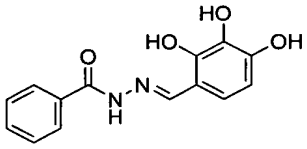

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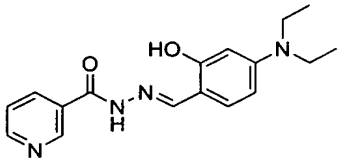

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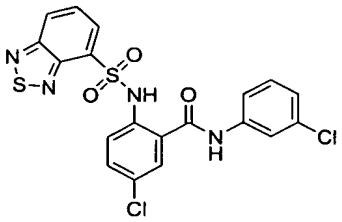
26. An antibacterial compound selected from:



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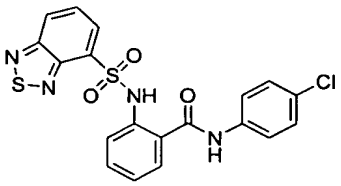

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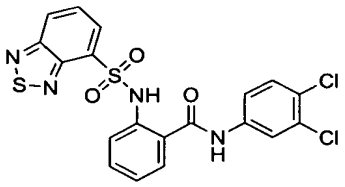

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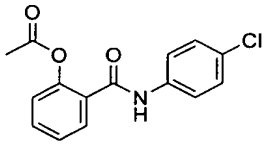

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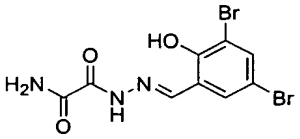

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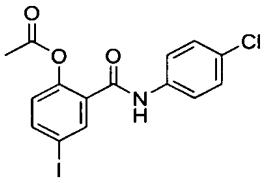

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27. An agent capable of decreasing bacterial virulence of the general formula I

A- CO-NH-B (I)

wherein

A is substituted or unsubstituted aryl, heteroaryl, substituted or unsubstituted aryloxy or carbamyl;

B is -X-Y, wherein X is zero, -N=CH- or –CO- and Y is selected from unsubstituted aryl,

unsubstituted heteroaryl, mono-, di- and tri-substituted aryl, mono-, di- and tri-substituted heteroaryl, with the proviso that, if X is -N=C-H-, Y is 2-hydroxyaryl.

28. The agent of claim 27, wherein, if A is substituted aryl or heteroaryl, it is preferred to be mono- or disubstituted by one or more of halogen, nitro, hydroxy, alkoxy, C_1-C_6 alkyl, C_1-C_6 alkenyl.

29. The agent of claim 27 , wherein Y is selected from aryl and heteroaryl substituted with one or several of halogen, C_1-C_6 alkyl, C_1-C_6 alkenyl.